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| Version | Date | Description of Revisions |
| 1 | August 30, 2006 | Approved final document. |
| 2 | October 16, 2007 | Minor revisions by Legal Services. |
| 3 | November 13, 2009 | Modified ‘Related Sections’ |
| 4 | March 14, 2011 | Minor Legal changes. |
| 5 | April 13, 2012 | Addition of References and Replacement Parts sections on this page |
| 6 | June 28, 2012 | Reformatted to Remove White Space |
| 7 | April 24, 2015 | General Formatting |

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NOTE:

This is a CONTROLLED Document. Any documents appearing in paper form are not controlled and should be checked against the on-line file version prior to use.

**Notice:** This Document hardcopy must be used for reference purpose only.

**The on-line copy is the current version of the document.**

# GEneral

## Related Sections

### [Under "Related Sections", identify other Sections that are related to, and/or dependent on, the work results or information specified elsewhere. The list should be limited to Sections with specific information that the reader might expect to find in this Section, but is specified elsewhere. For example, if hardware for aluminum entrances is specified in the aluminum entrance Section, a cross-reference would be appropriate in the finish hardware Section. The purpose of this cross-referencing is for information only, to aid in finding those other requirements—not to define the scope of the Section.

### Cross-referencing here may also be used to coordinate assemblies or systems whose components may span multiple Sections and which must meet certain performance requirements as an assembly or system.

### Contractor is responsible for coordination of the Work.

### This Section is to be completed/updated during the design development by the Consultant. If it is not applicable to the section for the specific project it may be deleted.]

### [List Sections specifying installation of products supplied but not installed under this Section and indicate specific items.]

### Section [\_\_\_\_\_\_ – \_\_\_\_\_\_\_\_\_\_\_\_]: Execution requirements for ...[item]... specified under this Section.

### [List Sections specifying products installed but not supplied under this Section and indicate specific items.]

### Section [\_\_\_\_\_\_ – \_\_\_\_\_\_\_\_\_\_\_\_]: Product requirements for ...[item]... for installation under this Section.

### [List Sections specifying related requirements.]

### Section [\_\_\_\_\_\_ – \_\_\_\_\_\_\_\_\_\_\_\_]: [Optional short phrase indicating relationship].

## Measurement and Payment

### [The Work outlined in this Section will be measured and paid for at the unit price as indicated in the Bid Form] or [The Work outlined in this Section is included in the Contract Price.] or [The Work outlined in this Section will be measured and paid for at the unit price for Work under Section ]. [Select appropriate method for each project].

## References

### American Society for Testing and Materials (ASTM)

#### ASTM C136/C136M-14 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates

#### ASTM D4318-10e1 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

#### ASTM D698 91, Test Method for Laboratory Compaction Characteristics of Soil Using Standard

#### ASTM D698-12e2 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft3 (600 kN-m/m3))

### Canadian General Standards Board (CGSB)

#### CAN/CGSB 8.1-88, Sieves, Testing, Woven Wire, Inch Series

## Definitions

### Excavation classes: Two classes of excavation will be recognized; rock excavation and common excavation.

#### Rock excavation: excavation of material from solid masses of igneous, sedimentary or metamorphic rock which, prior to its removal, was integral with its parent mass, and boulders or rock fragments having an individual volume in excess of 1 m3.

#### Common excavation: excavation of materials of whatever nature, which are not included under the definitions of rock excavation.

### Unclassified excavation: excavation of deposits of whatever character encountered during the course of the Work.

### Topsoil: material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.

### Waste material: material unsuitable for use in embankments or surplus to the requirements of the Contract.

### Borrow material: material obtained from areas outside of the right of way and required for construction of embankments or for other portions of the Work.

### Unsuitable materials:

#### Very weak and compressible materials under excavated areas.

#### Frost susceptible materials under excavated areas.

#### Frost susceptible materials:

##### Fine grained soils with a plasticity index of less than 10 when tested in accordance with ASTM D4318, and gradation within the limits specified when tested in accordance with ASTM C136: Sieve sizes shall confirm to CAN/CGSB 8.1.

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| --- | --- |
| Sieve Designation | % Passing |
| 2.00 mm | [100] |
| 0.10 mm | [45-100] |
| 0.02 mm | [10-80] |
| 0.005 mm | [0-45] |

##### Coarse grained soils containing more than 20% by mass passing a 0.075 mm sieve.

### Embankment: material derived from usable excavation and placed above the original ground or stripped surface up to the subgrade elevation.

### Pavement structure: combination of layers of unbound or stabilized granular sub-base, base, and asphalt or concrete surfacing.

### Subgrade elevation: elevation immediately below the pavement structure.

## Requirements of Regulatory Agencies

### Adhere to all applicable Provincial and environmental requirements if potentially toxic materials are involved.

## Traffic Provisions

### Provide and maintain all roadways, walkways and detours, for vehicular and pedestrian traffic and maintain access to fire hydrants at all times during the performance of the Work.

# PRODUCTS

## Materials

### All embankment materials require approval by the Consultant.

### Material used for embankments shall not contain organic matter, frozen lumps, weeds, sod, roots, logs, stumps or any other unsuitable material.

# EXECUTION

## Compaction Equipment

### Compaction equipment must be capable of obtaining the required densities of materials specified in the Contract Documents.

## Water Distributors

### Apply water with equipment capable of providing uniform distribution.

## Stripping of Topsoil

[If surficial material is muskeg rather than topsoil, delete the use of the term topsoil and edit 3.3 to suit project].

### Commence topsoil stripping of areas as indicated in the Contract Documents, or as directed by the Consultant, after all brush has been removed from these areas.

### Strip topsoil to the depths as indicated in the Contract Documents, or as directed by the Consultant. Do not mix topsoil with subsoil.

### Stockpile in locations as indicated in the Contract Documents, or as directed by the Consultant. The stockpile height should not exceed 3 m.

### Dispose of unused topsoil off Site as directed by the Consultant.

## Excavating

### General:

#### Advise the Consultant at least 5 Working Days in advance of the commencement of excavation operations for initial cross sections to be taken.

### Unsuitable materials:

#### Notify the Consultant whenever unsuitable materials are encountered in cut sections and remove all unsuitable materials to the depth and extent as directed by the Consultant.

#### Unsuitable materials excavated under subsection 3.4.2.1 are to be disposed of off Site or as agreed to by the Consultant.

### Rock excavation:

#### If, during excavation, material appearing to conform to the classification for rock is encountered, notify the Consultant immediately to enable measurements to be made to determine the volume of the rock.

### Borrow:

#### Use all available suitable materials removed from cut areas before taking any material from borrow areas.

#### Provide additional suitable embankment material from off Site as required.

### Blasting:

#### No blasting of rock is permitted.

### Side ditches:

#### Construct side ditches to the depths and widths as indicated in the Contract Documents or as directed by the Consultant in order to permit a steady flow of surface water.

#### Maintain and keep all ditches open and free from debris until final acceptance of the Work.

## Embankments

### Where indicated in the Contract Documents, or as directed by the Consultant, scarify or bench existing slopes in side hill or sloping sections to ensure a proper bond between new materials and existing surfaces. Obtain the prior approval of the Consultant of the method to be used.

### Break up or scarify existing pavement to the subgrade elevation as indicated in the Contract Documents.

### Do not place any material which is frozen and do not place any material on frozen surfaces.

### Maintain a crowned surface during construction to ensure the ready run off of surface water. Do not place any material in free standing water.

### For material containing less than 25% by volume of stone, or rock fragments larger than 100 mm:

#### Place and compact to the full width in uniform layers not exceeding 200 mm loose thickness. The Consultant may authorize thicker lifts if the specified compaction can be achieved.

#### Compact to a density of not less than 95% Standard Proctor Maximum Dry Density (SPMDD) in accordance with ASTM D698.

#### Bring the moisture content of the soil to the level required in order to achieve the specified compaction. Add water or aerate as required.

### Place topsoil taken from stockpile or other sources, at the locations and to the depths as directed by the Consultant. Remove all surface stones, roots and other debris and leave the surface in a uniform condition.

## Sub-grade Compaction

### After grading has been completed, scarify and mix the subgrade surface to the required depth of subgrade compaction.

### Remove any unsuitable materials found during the performance fo the Work. Replace with material approved by the Consultant.

### Compact the top 150 mm of subgrade soil to at least 100% of SPMDD in accordance with ASTM D698.

### Bring the moisture content of the soil to the level required in order to achieve the specified compaction. Add water or aerate as required.

## Finishing and Tolerances

### Shape and compact the entire roadbed to within 5 mm of the design elevations but not uniformly high or low.

### Do scarifying, blading, compacting or other methods of Work as necessary in order to provide a thoroughly compacted roadbed shaped to the grades and cross sections as indicated in the Contract Documents or as directed by the Consultant.

### Finish back and side slopes of common material to a neat condition, suitable for seeding, true to line and grade.

#### Remove all isolated boulders exposed in cut slopes and fill any resulting cavities.

#### Hand finish any slopes that cannot be finished satisfactorily by machine.

### Finish the back and side slopes of rock material to a neat and safe condition, true to line and grade.

## Protection

### Maintain all finished surfaces in a condition conforming to the requirements of this Section until acceptance by the Consultant.

**END OF SECTION**